



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,746	03/14/2005	Syunsuke Satoh	2005-0341A	9171
513	7590	01/11/2006	EXAMINER	
WENDEROTH, LIND & PONACK, L.L.P.			MURSKO, MARC J	
2033 K STREET N. W.				
SUITE 800			ART UNIT	
WASHINGTON, DC 20006-1021			PAPER NUMBER	
			2834	

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/527,746

Applicant(s)

SATOH ET AL.

Examiner

Marc J. Mursko

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>03/14/2005</u> . | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are being rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura(Japanese publication 2002-076806) in view of Piazza(U.S. Patent 6,700,313).

As far as claim 1, in figure 2 of Kitamura teaches a tuning fork resonator(100) comprising a base(130) portion and a plurality of leg portions(120,120) extending in the same direction from the base portion in parallel to one another, wherein a groove(120a) portion is formed in a major surface of each leg portion, an in groove electrode(140) is formed in the groove portion, a side surface electrode(140) is formed on a side surface of the leg portion, and the in groove electrode and the side surface electrode are connected via a base portion electrode formed in the base portion, wherein an outward extending groove electrode(140) extending on at least one of a vertical wall facing the base portion of the groove portion and a vertical wall that is a side surface of the groove portion and a leg portion.

Kitamura does not teach a beside-groove electrode for leading the outward extending groove electrode on the leg portion major surface along beside the groove portion to the base portion electrode, are formed.

Art Unit: 2834

In figure 4 of Piazza, Piazza teaches a beside-groove electrode(54) for leading the outward extending groove electrode on the leg portion major surface(44) along beside the groove portion to the base portion electrode(58), are formed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kitamura with the teaching of Piazza because as stated in Piazza column 3 lines 51-52 by having the electrodes disposed in that manner allows the arms to vibrate in flexure mode.

As for claim 2, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein the outward extending groove electrode(140) is formed on at least the vertical wall that is the side surface of the groove(120a) portion.

Kitamura does not teach a beside-groove electrode is integrated with the outward extending groove electrode.

In figure 4 of Piazza, Piazza teaches the beside-groove electrode(54) is integrated with an outward extending groove electrode(54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kitamura with the teaching of Piazza and to make the beside-groove electrode integrated with the outward extending groove electrode because as stated in Piazza column 3 lines 51-52 by having the electrodes disposed in that manner allows the arms to vibrate in flexure mode.

As far as claim 3, in addition to what was explained above in Kitamura in view of Piazza, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the teaching of Kitamura with the teaching of Piazza to make a groove portion formed in each of the plurality of leg portions is deviated from a center line of the leg portion in a width direction of the leg portion major surface, and the beside-groove electrode is deviated from the center line in the width direction opposite to that of the deviated groove portion because by having the groove portion deviated from the center line allows more room on one side of the leg to place that beside groove electrode therefore allowing more room for error when the beside groove electrode is connected either manually or as part of a mass production manufacturing process.

As far as claim 4, in addition to what was explained above in Kitamura in view of Piazza, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kitamura with the teaching of Piazza to make the groove portion deviated from the center line of the leg portion in a direction away from another leg portion parallel thereto, and the beside-groove electrode is deviated from the center line of the leg portion in a direction approaching the other leg portion parallel thereto because the inner leg portion of the resonator is more difficult to manufacture due to its confined space, therefore there is a greater chance that the inner portion of the resonator between the legs will be made larger than designed so by having the groove portion deviated from the center line of the leg portion in a direction away from another leg portion parallel thereto, and the beside-groove electrode is deviated from the center line of the leg portion in a direction approaching the other leg portion parallel this is more room for error when the resonator is manufactured.

As far as claim 5, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein an electrode(140) formed at an edge of the outward extending groove electrode is thicker than an electrode formed at edge on a base portion side of the groove portion.

As far as claim 6, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein the vertical wall of the groove portion(120a) is at a right or acute angle with respect to the leg portion major surface(120).

As far as claim 7, in addition to what was explained above in Kitamura in view of Piazza, in figure 5 of Kitamura, Kitamura teaches a tuning fork unit(200) comprising the tuning fork resonator(100) according wherein the tuning fork resonator is mounted in a package(210).

As for claim 8, in light of what was explained above in Kitamura in view of Piazza, it is inherent to have a method for producing a tuning fork resonator comprising a base portion and a plurality of leg portions extending in the same direction from the base portion in a parallel to one another, wherein a groove portion is formed in the groove portion, a side surface electrode is formed on a side surface of the leg portion, and the in groove electrode and the side electrode are connected via a base portion electrode formed in the base portion and forming an outward extending groove electrode on at least one vertical wall facing the base portion of the groove portion and a vertical wall that is a side surface of the groove portion and a leg portion tip-side major surface, and

Art Unit: 2834

beside-groove electrode for leading the outward extending groove electrode on the leg portion major surface along beside the groove portion to the base portion electrode.

It is well known to one of ordinary skill in the art at the time the invention was made to use vacuum deposition to disposing the tuning fork resonator in a work holder in a state such that the tuning fork resonator is spaced at a predetermine distance from a deposition source, to have the leg portion major surface of the tuning fork resonator is tilted with respect to the deposition source; and to evaporate an electrode material from the deposition source and applying the electrode material to the tuning fork resonator.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kitamura with the teaching of Piazza to have an edge portion on a base portion side of the tuning fork resonator is closer to the deposition source than an edge on leg portion side thereof because the base portion is the most solid portion and therefore less subject to movement that could cause it to collide with the deposition source.

As for claim 9, in addition to what was explained above in Kitamura in view of Piazza, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kitamura with the teaching of Piazza to make a groove portion formed in each of the plurality of leg portions is deviated from a center line of the leg portion in a width direction of the leg portion major surface, and the beside-groove electrode is deviated from the center line in the width direction opposite to that of the deviated groove portion because by having the groove portion deviated from the center line allows more room on one side of the leg to place that beside groove

Art Unit: 2834

electrode therefore allowing more room for error when the beside groove electrode is connected either manually or as part of a mass production manufacturing process.

As for claim 10, in addition to what was explained above in Kitamura in view of Piazza, in addition to what was explained above in Kitamura in view of Piazza, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kitamura with the teaching of Piazza to make the groove portion deviated from the center line of the leg portion in a direction away from another leg portion parallel thereto, and the beside-groove electrode is deviated from the center line of the leg portion in a direction approaching the other leg portion parallel thereto because the inner leg portion of the resonator is more difficult to manufacture due to its confined space, therefore there is a greater chance that the inner portion of the resonator between the legs will be made larger than designed so by having the groove portion deviated from the center line of the leg portion in a direction away from another leg portion parallel thereto, and the beside-groove electrode is deviated from the center line of the leg portion in a direction approaching the other leg portion parallel this is more room for error when the resonator is manufactured.

As for claim 11, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein an electrode(140) formed at an edge of the outward extending groove electrode is thicker than an electrode formed at edge on a base portion side of the groove portion.

As for claim 12, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein an electrode(140) formed at



Art Unit: 2834

an edge of the outward extending groove electrode is thicker than an electrode formed at edge on a base portion side of the groove portion.

As for claim 13, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein an electrode(140) formed at an edge of the outward extending groove electrode is thicker than an electrode formed at edge on a base portion side of the groove portion.

As for claim 14, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein an electrode(140) formed at an edge of the outward extending groove electrode is thicker than an electrode formed at edge on a base portion side of the groove portion.

As for claim 15, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein an electrode(140) formed at an edge of the outward extending groove electrode is thicker than an electrode formed at edge on a base portion side of the groove portion.

As for claim 16, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein the vertical wall of the groove portion(120a) is at a right or acute angle with respect to the leg portion major surface(120).

As for claim 17, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein the vertical wall of the groove portion(120a) is at a right or acute angle with respect to the leg portion major surface(120).

As for claim 18, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein the vertical wall of the groove portion(120a) is at a right or acute angle with respect to the leg portion major surface(120).

As for claim 19, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein the vertical wall of the groove portion(120a) is at a right or acute angle with respect to the leg portion major surface(120).

As for claim 20, in addition to what was explained above in Kitamura in view of Piazza, in figure 2 of Kitamura, Kitamura teaches wherein the vertical wall of the groove portion(120a) is at a right or acute angle with respect to the leg portion major surface(120).

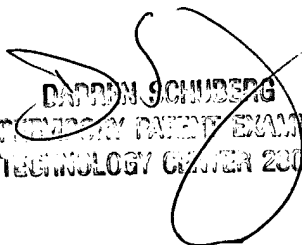
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc J. Mursko whose telephone number is 571-272-8394. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MM  
MM

  
DARREN SCHUBERGER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800